Do you need to know chemistry in order to be a good bone surgeon?

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Institute: The Weizmann Institute of Science, Rehovot.

Country: Israel

Subject: Chemistry.

Grade level: 10-12.

Curriculum content: Oxidation-Reduction, electrochemical series.

Kind of activity: Critical reading and group activity

Anticipated time: about 4 lessons of 45 minutes each.

Task description

1. The following note was published in the sport sections of one of the newspapers:

During a soccer game the knee of David, one of the players of Tel-Aviv team, collided with the head of Eric, one of the players of the Jerusalem team, wounded his face, and caused him four bone breaks in his cheek. As a result, Eric underwent a surgery of six hours, in which his cheek was fixed by four nails and a metal platter.

Question: If you would have escorted the wounded player to the hospital, what questions would you pose to the surgeon regarding bone affixing?

2. In order to choose the best metal to be used in bones surgery we suggest examining activity of different metals. In the next virtual experiment you will be able to research relative activity of metals.

Enter the link:
http://stwww.weizmann.ac.il/G-CHEM/animationsindex/Redox/home.html

Perform activity No. 1.
On the screen you will see series of beakers each contains a solution of metal ions, you can also see a list of solid metals.

1. Choose one of the metals and insert it into the different solutions, wait until a massage tells you to remove the metal from the solutions.

2. Write your observations.
3. In which of the beakers chemical reaction accurse?
4. Repeat steps 1-3 for all the different metals. Summary all your observations in a table.

	$Mg^{2+}_{(aq)}$	$Zn^{2+}_{(aq)}$	$Cu^{2+}_{(aq)}$	$Ag^{1+}_{(aq)}$
Mg				
Cu				
Zn				
Ag				

5. In order to observe the reactions in a molecular level, click on "Molecular Scale Reaction" and follow the directions.
6. Write the chemical equation for two reactions that happened.